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EFFECTIVENESS OF VALPORIC ACID AND CARBAMAZEPINE THERAPEUTIC DRUG MONITORING ON ADULT PATIENT.

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ABSTRACT

The aim of this study is to analyze the effectiveness of therapeutic drug monitoring in hospitalized adult patients who were treated with carbamazepine and valproic acid. The population in this study is 129 adult patients including 56 of male patients and 73 of female patients. The population pharmacokinetic is assumed using one-compartment pharmacokinetic model. The demographic parameter, renal profiles were analyzed based on gender and race to check their influence on effectiveness on drug therapies. Pharmacokinetic parameters like clearance (Cl), drug serum level and dose/kg in both monotherapy and polytherapy is identified to check their potential influence on carbamazepine and valproic acid pharmacokinetics. From carbamazepine monotherapy, data analysis of mean and standard variation of Cl(49.23±10.9), dose/kg(10±5.3) ,drug serum level (7.1±4.0) whereas in carbamazepine polytherapy with valproic acid, the mean and standard variation of Cl(10.23±4.9), dose/kg(11±4.7) and drug serum level(7.3±4.0). On the other hand, in valproic acid monotherapy data analysis, the mean and standard variation of Cl(10.23±4.9) , dose/kg(14.3±5.8) ,drug serum level (52.95±10.36) whereas valproic acid polytherapy with carbamazepine, the mean and standard variation of Cl(15.29±5.6), dose/kg(11±4.7) and drug serum level(39.48±9.85). This study indicates there are high inter and intra-individuality of patients between these two therapy since COV value for CBZ's Cl = 62%, CBZ's dose/kg and CBZ's serum level are 61 %. COV value in VPA's Cl is 58%, VPA's dose/kg=37% and VPA's serum =171%. Therefore, TDM is effective in monitoring the effectiveness of drug

CHAPTER ONE

INTRODUCTION

Epilepsy is an impairment of the brain function characterized by recurrence and unpredictable seizure. Seizure is a non-epileptic condition and can occur in a normal brain. This is because of disorder, synchronous, periodic firing of the brain neurons (Goodman, Hardman, Limbird, & Gilman, 2001). An anti-convulsant drug is available as a therapy to control seizure.

This type of sickness needs a long-term therapy and is a potential risk to patient's non-compliance. It started with the initial dose which clinically affects the plasma concentration. This dose is gradually increased at appropriate interval in order to control seizure. However there is a limit to the dose adjustment as it may cause toxicity (Goodman et al., 2001).

However if the patient fully comply with the physician's order and the seizure persist, the drug will be changed to a different second drug. Some patients fail to respond to the first single drug but it is completely control with a second single drug. In cases where the second single drug is also ineffective, the physician may prescribe